4. (Amended) The method of Claim 1, wherein [said] the alginate salt is prepared from an alginate source selected from *Macrocystis pyrifera* and *Laminaria hyperborea*.

5. (Amended) The method of Claim 1, wherein [said] the source of calcium ions is selected from the group consisting of calcium carbonate, calcium sulfate, and calcium sulfate dihydrate.

6. (Amended) The method of Claim 1, wherein [said] the calcium releasing compound is D-glucono-δ-lactone.

A1 cont.

7. (Amended) The method of Claim 1, wherein [said] the source of calcium ions is calcium carbonate and [said] the calcium releasing compound is D-glucono-δ-lactone, and wherein the molar ratio of [said] the calcium carbonate to [said] the D-glucono-δ-lactone is 0.5.

8. (Amended) The method of Claim 1, further comprising the step of implanting [said] the three-dimensional crosslinked hydrogel system.

9. (Amended) The method of Claim 1, wherein [said] the three-dimensional crosslinked hydrogel system has a thickness of between about 4 mm and about 8 mm, and a diameter of approximately 18 mm.

10. (Amended) The method of Claim 1, wherein [said] the three-dimensional crosslinked hydrogel system has a calcium ion to carboxyl molar ratio of 0.27.

SUB B2

11. (Amended) A method for tissue engineering *in vitro*, the method comprising the steps of:

(a) providing

SUB B2 CONT.

i) cells,

ii) an alginate salt,

iii) a source of calcium ions, and

iv) a calcium releasing compound;

b)] mixing [said] cells, [said] an alginate salt and [said] a source of calcium ions to provide a mixture;

[c)] adding [said] a calcium releasing compound to [said] the mixture to provide a crosslinked hydrogel; and

[d)] culturing [said] the crosslinked gel to provide a three-dimensional crosslinked hydrogel/cell system for growing [said] the cells *in vitro*.

A1 CONT.

12. (Amended) The method of Claim 11, wherein [said] the alginate salt is selected from the group consisting of sodium alginate and potassium alginate.

13. (Amended) The method of Claim 11, wherein [said] the alginate salt is prepared from an alginate source selected from *Macrocystis pyrifera* and *Laminaria hyperborea*.

14. (Amended) The method of Claim 11, wherein [said] the source of calcium ions is selected from the group consisting of calcium carbonate, calcium sulfate, and calcium sulfate dihydrate.

15. (Amended) The method of Claim 11, wherein [said] the calcium releasing compound is D-glucono-δ-lactone.

16. (Amended) The method of Claim 11, wherein [said] the source of calcium ions is calcium carbonate and [said] the calcium releasing compound is D-glucono-δ-lactone, and wherein the molar ratio of [said] the

calcium carbonate to [said] the D-glucono-δ-lactone is 0.5.

17. (Amended) The method of Claim 11, further comprising the step of implanting [said] the three-dimensional crosslinked hydrogel/cell system.

18. (Amended) The method of Claim 11, wherein [said] the three-dimensional crosslinked hydrogel/cell system has a thickness of between about 4 mm and about 8 mm, and a diameter of approximately 18 mm.

A1 CONT.

19. (Amended) The method of Claim 11, wherein [said] the three-dimensional crosslinked hydrogel/cell system has a calcium ion to carboxyl molar ratio of 0.27.

20. (Amended) The method of Claim 11, wherein [said] the cells are osteoblasts.

Please add the following new claims:

A2

21. The method as defined in claim 1, further comprising the step of selectively controlling the hydrogel system to a predetermined size by varying the calcium ion concentration.

SUB B3

22. The method as defined in claim 21 wherein the hydrogel system swelled at calcium ion concentrations between about 0.0005 M and about 0.0010 M; wherein the hydrogel system shrank at a calcium ion concentration of about 0.0040 M; and wherein the hydrogel system remained substantially the same size at calcium ion concentrations between about 0.0020 M and about 0.0030 M.

23. A method for preparing a three-dimensional hydrogel system, the method comprising the step of:

adding a cation-releasing compound to a mixture of at least one hydrophilic polymer and a source of

cations to provide a three-dimensional crosslinked hydrogel system.

24. The method as defined in claim 23, wherein the hydrophilic polymer is an alginate salt, the source of cations is a source of calcium ions, and the cation-releasing compound is a calcium-releasing compound.

25. The method as defined in claim 24 wherein the alginate salt is selected from the group consisting of sodium alginate and potassium alginate.

26. The method as defined in claim 24, wherein the source of calcium ions is selected from the group consisting of calcium carbonate, calcium sulfate, and calcium sulfate dihydrate.

27. The method as defined in claim 26 wherein the calcium releasing compound is D-glucono-δ-lactone.

28. The method as defined in claim 27 wherein the source of calcium ions is calcium carbonate, and wherein the molar ratio of the calcium carbonate to the D-glucono-δ-lactone is 0.5.

29. The method as defined in claim 24 wherein the three-dimensional crosslinked hydrogel system has a calcium ion to carboxyl molar ratio ranging between about 0.09 and about 0.9.

30. The method as defined in claim 29 wherein the calcium ion to carboxyl molar ratio ranges between about 0.18 and about 0.72.

31. The method as defined in claim 24, further comprising the step of selectively controlling the

hydrogel system to a predetermined size by varying the calcium ion concentration.

32. The method as defined in claim 31 wherein the hydrogel system swelled at calcium ion concentrations between about 0.0005 M and about 0.0010 M; wherein the hydrogel system shrank at a calcium ion concentration of about 0.0040 M; and wherein the hydrogel system remained substantially the same size at calcium ion concentrations between about 0.0020 M and about 0.0030 M.

33. The method as defined in claim 23, further comprising the step of culturing the three-dimensional crosslinked hydrogel system for growing cells *in vitro*.

34. A three-dimensional crosslinked hydrogel composition, consisting essentially of:

at least one hydrophilic polymer;

a source of cations; and

a cation-releasing compound.

35. The composition as defined in claim 34, wherein the hydrophilic polymer is an alginate salt selected from the group consisting of sodium alginate and potassium alginate; wherein the source of cations is a source of calcium ions selected from the group consisting of calcium carbonate, calcium sulfate, and calcium sulfate dihydrate; and wherein the cation-releasing compound is D-glucono-δ-lactone.

36. The composition as defined in claim 35 wherein the source of calcium ions is calcium carbonate, and wherein the molar ratio of the calcium carbonate to the D-glucono-δ-lactone is 0.5.

37. The composition as defined in claim 35 wherein the three-dimensional crosslinked hydrogel system